ALBERTA CARBON TRUNK LINE

Backgrounder

The Alberta Carbon Trunk Line (ACTL) system, the world's newest integrated large-scale carbon capture, utilization, and storage (CCUS) project, is now fully operational.

- Using proven technology, the ACTL system captures, compresses, safely transports and permanently stores CO_2 that would otherwise be emitted into the environment.
    - Wolf Midstream owns and operates the CO_2 capture and pipeline transportation assets.
    - Enhance Energy Inc. is the owner and operator of the CO_2 utilization and storage portion of the ACTL project through its enhanced oil recovery (EOR) operations.
    - The initial supply of CO_2 is captured from two industrial facilities in Alberta's Industrial Heartland: The North West Redwater Partnership Sturgeon Refinery and Nutrien's Redwater Fertilizer facility.
        - The Sturgeon Refinery is the world's only refinery designed from the outset to minimize its environmental footprint through carbon capture, which supports production of a low carbon intensity diesel from Alberta's bitumen resources.
- With the world's largest capacity pipeline for CO_2 from human activity, the ACTL is capable of transporting up to 14.6 million tonnes of CO_2 per year to mature oil and gas reservoirs for use in EOR and permanent storage. This represents approximately 20% of all current oil sands emissions or is equal to the impact of capturing the CO_2 from more than 2.6 million cars in Alberta.
- The future of a lower carbon economy relies on key infrastructure like the ACTL system to provide sustainable solutions to global energy requirements.

The ACTL pipeline is the core of an expandable CCUS system.

- Designed with excess capacity, the ACTL will connect more facilities and storage reservoirs in the future as demand increases for an effective solution to manage emissions.
- Routing of the ACTL pipeline was selected to maximize access to both facilities looking for carbon solutions and oil reservoirs that offer ideal characteristics for oil recovery and the secure and permanent storage of CO_2.
- This CO_2 infrastructure supports significant future emissions solutions and innovation in carbon capture technology.

CCUS represents one of the most promising solutions for combating climate change and is a powerful tool to prevent CO_2 emissions from entering the atmosphere.

- CCUS involves capturing and compressing the CO_2 from fossil fuel sources before, during and after combustion, injecting the CO_2 deep into contained geological formations such as depleted oil and gas fields, where it is permanently, and safety stored.
- Injected CO_2 is then permanently trapped in a secure, natural reservoir, approximately two kilometres below the earth's surface, which previously held oil and gas for tens of millions of years.

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The ACTL System uses the captured CO_2 for enhanced oil recovery (EOR) in Alberta, leveraging the province's numerous suitable storage reservoirs and technical expertise.

- Depleted oil fields offer known reservoir capacities and injectivity and can accept large volumes of CO_2 for enhanced oil production and subsequent storage.
- Pure CO_2 is injected into a carefully selected hydrocarbon reservoir, which results in oil being flushed from the pore spaces in the reservoir rock and 'pushed' to the production wells where it is pumped to the surface and recovered, thereby increasing the quantity of oil that is ultimately recovered from the reservoir.
- The energy produced represents a low carbon fuel. A typical barrel of Alberta crude oil that is produced, refined, and consumed, results in approximately 0.4 tonnes of CO_2 being emitted into the atmosphere. In contrast, each barrel of EOR oil produced from the Clive reservoir results in 0.3 to 0.7 tonnes of CO_2 being permanently stored, resulting in an ultra-low carbon energy source, and a unique and environmentally sustainable development project.
- With the ACTL system, we are lowering the environmental footprint of industry in Alberta while increasing light oil recovery, royalties and job creation which provides value to the country, the province and all citizens.

The ACTL system marks an important milestone project on the path for Alberta and Canada to effectively manage carbon emissions and support a cleaner global energy future.

- As focus on climate and the environment heightens around the globe, so too does the need for action. Our collective commitment to balance the planet's demand for energy while reducing our environmental footprint helps advance our progress, one solution at a time.
- The ACTL system is shifting the way carbon emissions are managed in Alberta.
- With the world's largest capacity pipeline for CO_2 from human activity, the ACTL is capable of transporting up to 14.6 million tonnes of CO_2 per year to mature oil and gas reservoirs for use in EOR and permanent storage. This represents approximately 20% of all current oil sands emissions or is equal to the impact of capturing the CO_2 from more than 2.6 million cars in Alberta.
- The future of a lower carbon economy relies on key infrastructure like the ACTL system to provide sustainable solutions to global energy requirements.
- This project was supported by both the Government of Alberta and the Government of Canada to help make CCUS technologies more accessible and encourage wider use of the technology around the world.